

WHAT IS CLAIMED IS:

1. A piping structure of a refrigerant cycle system for a vehicle, the refrigerant cycle system including a refrigerant cycle equipment provided in an engine compartment of the vehicle, and an evaporator disposed in an air conditioning unit that is provided in a passenger compartment of the vehicle, the piping structure comprising

a front side member of a vehicle body, disposed at one side in a vehicle lateral direction on a lower side of the engine compartment, the front side member extending in a vehicle front-rear direction; and

a refrigerant pipe through which refrigerant flows for circulating the refrigerant between the refrigerant cycle equipment and the evaporator,

wherein the refrigerant pipe is arranged in the engine compartment along the front side member.

2. The piping structure according to claim 1, wherein:

the refrigerant cycle equipment includes a compressor for compressing refrigerant from the evaporator;

the refrigerant pipe includes a suction tube for supplying refrigerant from the evaporator to the compressor, and a liquid tube for supplying liquid refrigerant from the refrigerant cycle equipment to the evaporator; and

the suction tube and the liquid tube are arranged in the engine compartment along the front side member.

3. The piping structure according to claim 1, wherein:

the front side member includes an inner wall provided in the engine compartment, and a recess portion provided to be recessed from a surface of the inner wall to extend in the vehicle front-rear direction; and

the refrigerant pipe is disposed in the recess portion of the inner wall of the front side member.

4. The piping structure according to claim 1, wherein:

the front side member includes an upper wall, a lower wall, and an inner wall connecting the upper wall and the lower wall in the engine compartment;

the inner wall has an inclined surface inclined from a corner between the inner wall and one of the upper wall and lower wall; and

the refrigerant pipe is arranged along the inclined surface.

5. The piping structure according to claim 1, further comprising a piping space provided at a lower side of the front side member in the engine compartment along the front side member,

wherein the refrigerant pipe is arranged in the piping space.

6. The piping structure according to claim 1, further comprising

an engine-mounting base for mounting an engine of the vehicle, wherein:

the engine-mounting base is attached to an upper surface of the front side member;

the engine-mounting base has an inner wall surface inclined outwardly; and

the refrigerant pipe is arranged on the inner wall surface of the engine-mounting base.

7. The piping structure according to claim 1, wherein:

the front side member includes an outer wall and an inner wall arranged inside of the outer wall; and

the refrigerant pipe is arranged to penetrate through an inner space between the outer wall and the inner wall.

8. The piping structure according to claim 2, wherein the compressor is provided in a front area within the engine compartment, the piping structure further comprising:

a low-pressure connection pipe, arranged between the compressor and the suction tube, for connecting the compressor and the suction tube, wherein the low-pressure connection pipe is arranged at a position separated from the front side member.

9. The piping structure according to claim 2, wherein

the refrigerant cycle equipment includes a condenser for condensing refrigerant discharged from the compressor, the condenser being provided in a front area within the engine compartment, the piping structure further comprising:

a high-pressure connection pipe, arranged between the condenser and the liquid tube, for connecting the condenser and the liquid tube, wherein the high-pressure connection pipe is arranged at a position separated from the front side member.

10. The piping structure according to claim 2, wherein the refrigerant cycle equipment further includes a condenser for condensing refrigerant discharged from the compressor, the compressor and the condenser being provided in a front area within the engine compartment, the piping structure further comprising:

a low-pressure connection pipe, arranged between the compressor and the suction tube, for connecting the compressor and the suction tube, wherein the low-pressure connection pipe is arranged at a position separated from the front side member; and

a high-pressure connection pipe, arranged between the condenser and the liquid tube, for connecting the condenser and the liquid tube, wherein the high-pressure connection pipe is arranged at a position separated from the front side member.